Space Weather Forecast

Issued on Friday 28 March 2025 at 12:59 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Minor geomagnetic storms intervals. Chance of Moderate flares (Minor-Moderate radio blackouts) throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was Low. There are five sunspot regions on the Earth-facing solar disc. The most significant region is in the northeast with some slight magnetic complexity. Most other regions are small, weak and magnetically simple and stable.

A larger filament eruption occurred around 27/2200 UTC from the southeast quadrant. The associated CME is expected to pass below and behind Earths orbit.

Solar Wind / Geomagnetic Activity: Solar wind parameters continued to show the influence of a high speed stream (HSS) due to a connection with a large coronal hole feature. Solar winds initially started very strong, just above 800 km/s, on a slow declining trend to current strong levels of 650 km/s. The strength of the solar wind's magnetic field started at Moderate but since then has steadily declined to weak levels. The north-south component initially fluctuated between weak positive (northward) and weak negative (southward) orientation, then favouring a positive (northward) orientation. Geomagnetic activity was Unsettled to Active (Kp3-Kp4).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate solar activity is expected, with a chance of further isolated Moderate class flares.

Solar Wind / Geomagnetic Activity: No Earth-directed coronal mass ejections feature in the forecast, though an eruption on 25th may give a slight chance of a glancing blow on either days 2 or 3 (29 or 30th Mar), although this carries low confidence.

Solar winds are currently strong, around 650km/s, due to a connection to a high speed stream associated with the positive coronal hole in the southwest. Solar winds are expected to remain strong through much of today (28th) and then gradually decline to slightly elevated levels by day 4 (31st Mar).

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Mainly unsettled to active levels are expected today (28th), with a chance of isolated Minor Geomagnetic storm intervals. Geomagnetic activity is then expected to steadily decline, becoming Quiet to Unsettled through tomorrow (29th) but with a chance of isolated Active levels at first. Mainly Quiet activity is expected by day 4 (31st).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to persist at background levels, with a slight chance of enhancement from any larger flares.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	30	20	10	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	No	25	25	30	30
Very Active	R3-R5 (X Class)	No	1	1	1	1

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Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	1	1	1	5
Very Active	**≥ S3 ***	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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